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Original article

PRACTICAL STRATEGIES OF RECOVERY IN TENNIS

TEODOR DRAGOS FLORIN[1], POPA CRISTIAN[1], PETCU DAMIAN[1]

Abstract

Problem statement. Recovery is a complex proces focusing on recovery from training: session to session, day to day and week to week. Recovery is indispensable during training as well as in competition between matches and between days during multi-day tournaments. Fatigue – sensation of tiredness associated with decrements in muscular and nervous system performance and function. In tennis this fatigue presents itself as a decrease in stroke accuracy, stroke mechanics, serve velocity, court movement, increase in errors, poor shot selection, increased mental frustration and mental errors. To improve recovery aspects, hydration strategies should seek to optimize hydration status continuously, and not solely around competition schedules. Neurological fatigue is difficult to measure but is in direct response to stressful activities involving large volumes of high power and force activities.

The aim: To present practical coaching aspects and strategies for recovery in tennis.

Conclusions:

The growing match play and training demands of a professional tennis player are putting a greater emphasis on the role of performance recovery and reducing the risk of injury. This process should start immediately after a competitive game or high intensity training session before the opportunity to fully optimise the recuperation process diminishes.

Key Words: fatigue, tennis, recovery, practical strategies.

Introduction

Fatigue is a limitativ factor of sport performance, response to training and stress, and it is a part of the human adaptive process and is a physiological protective condition for the human body, felt during physical exertion and manifested by decreased motor efficiency and accuracy. Recognizing the player's fatigue and how it is managed in both training and performance contexts is the basis for recovery.

Recovery is addressed to a healthy body, morphologically and functionally intact, required by physical effort.

The role of recovery is to help the players adapt faster in training process and to prevent the illnesses and injuries (Flanagan, Merrick, Baum, et al., 2000). Recovery is regarded as a multifaceted (eg, physiological, psychological) restorative process relative to time. In case an individual's recovery status (ie, his or her biopsychosocial balance) is disturbed by external or internal factors, fatigue as a

[1] University Sport Club "Simona Halep", bd Mamaia, no 124, Romania
Enail: petcudamian500@yahoo.com
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condition of augmented tiredness due to physical and mental effort develops (Halson, 2014).

Regeneration in sport and exercise refers to the physiological aspect of recovery and ideally follows physical fatigue induced by training or competition (Kellmann, Beckmann, 2018).

Performance tennis demands on a multitude of physiological systems, so it is important to minimize fatigue and optimize recovery after training and competitions.

Recovery in tennis is important during training as well as in competition between matches and between days during multi-day tournaments.

Factors who influences athletes recovery:

- **Age -** athletes over 25 years need longer post-workout recovery periods, compared to younger ones. Adolescents also recover more slowly than adults.
- **Lifestyle -** the quality and quantity of sleep hours, social activities, the relationship with the coach, friends, family or school situation.
- **Environmental factors -** competitions and trainings at high altitudes (over 3000 meters), in a cold or humid environment make the recovery process difficult.
- **Type of muscle fiber**- fast contractile fibers tend to tire faster than slow-contractile fibers due to their contractile properties.
- **Training and competition -** volume, intensity, duration, training / competition, degree of fatigue and recovery after the previous competition.
- **Psychological factors** - stress and anxiety caused by the level of competition.
- **Health status-** An injured athlete will have a harder time recovering due to high levels of catabolic hormones. **Nutrition -** balanced intake of carbohydrates, proteins and electrolytes necessary for the formation of ATP-PC and for the recovery of damaged muscle tissue.

Table: Performance indicators to assess the effectiveness of the recovery program

Assessment areas	Performance indicators
Workloads completed	Intensity (training and match) Volume of work done No. and scheduling of tournaments
Player's health and wellness	Medical and musculoskeletal screening • No. of injuries • Incidence of illness • Handling pressure and stress
Player's performance results	Fitness tests • Tennis specific tests • Competition results • Performance analysis data • Rankings
Player's evaluation of themself (player diary and/or log book)	Wellbeing • Training performance • Match performance • Lifestyle management
Coach evaluation of the player (performance analysis data, and empirical observations)	Skill execution • Tactical skills and decision making • Handling pressure and stress

(Calder, 2009)

Methods to enhance recovery

The sport recovery can be classified:

1. after induced effects:

- neuropsychic recovery;

-neuromuscular recovery;

- endocrinometabolic recovery;

- cardiorespiratory recovery.

2. by type of recovery:

-balneo-physiotherapy-hydrotherapy (hot hydrotherapy, sauna, massage-automassage, natural-artificial oxygenation, acupuncture-acupressure, yoga, etc.);

-psychotherapeutic (suggestion-self-suggestion, autogenic training, neuromuscular relaxation, neurotropic - psychotropic medication);

- dietary (alkalizing, hydro-sugary, rich in vitamins and trace elements, caloric norm, etc.);

- pharmacological (compensatory, substitutive);

- active rest-passive rest (sleep).

Popular methods used by tennis players to increase recovery depend on the type of activity performed, the time until the next training session or competition. The most popular recovery techniques is:

- active recovery
- sleep
- stretching
- hydrotherapy
- nutrition
- compression garments
- massage

Active Recovery

The literature argue that the active movements when sub-maximal in nature would assist with the rate of post-exercise lactate removal. Active recovery activities involves light, who facilitate removal of waste products from the system like jogging, biking or walking at the end of a training session or doing easy yoga.

In general, current recommendations for performing an active cool down, and submaximal exercise to promote recovery are supported, however the evidence is not universally superior to other modes of recovery in experimental studies.

Immersion in water

The immersion of a body in core-temp neutral (34oC - 36oC / 93oF - 97oF) water results in marked changes in the circulatory, pulmonary, renal and musculoskeletal systems as a result of increased hydrostatic pressures (Cochrane, 2004).

It is used by the players in the recovery process after competition, to reduce muscle pain, joint inflammation, chronic pain symptoms and repetitive injuries. Cold water immersion alone is sometimes used without alternating with warm water immersion (Vaile, Halson, Gill, Dawson, 2008).

Showering within 5 to 10 minutes at the end of a training session or match may accelerate recovery of physiological states, and assist with peripheral neural fatigue (Viitasalo, Niemela, Kaappola, 1995).

Passive rest – sleep

Passive rest - sleep is probably the most important form of recovery for a player (Gunning, 2001). A good night's sleep of 8 to 9 hours provides invaluable adaptation time to adjust to the physical, neurological, immunological and emotional stressors that are experienced during the day (Cochrane, 2004). Studies show that failure to sleep can lead to decreased endurance, maximum strength and cognitive performance (Abaïdia, Dupont, 2018).

Stretching

The stretching techniques restore resting muscle length and a normal range of movement for joints, rather than aim to increase muscle length or joint range of movement.

Compressive Clothing

Studies argue that compressive garments help the players to reduce injuries, increase performance and enhance recovery.

Massage

A scientific review shows that massage improves circulatory tissue, reduces muscle cramps, improves posture, promotes muscle relaxation and tissue elasticity. To improve the mobility of the fascia (connective tissue) at the thoracic, lumbar and lower limbs the players must use the roller massage.

Nutrition and hidration

Eat a rich source of protein high quality containing essential amino acids as soon as possible possible after training or competition. Plan a nutrition model that includes an optimal portion of 20-25 g of protein along with other nutritional goals every 3 to 5 hours to fully maximize muscle fiber recovery. Eat carbs as soon as possible after training / competition taking advantage of the "metabolic window in which the rate of glycogen storage in the muscles is maximum.

Rehydration is important especially when the weather it is very warm. To prevent muscle cramps, athletes should know that for every kg lost in weight as a result of competition they should consume 1,5 l of fluid. Sodium is the key electrolyte that is lost when the players competing in a humid and warm environment. As a result the drinks rehydration must contain sodium

Conclusions

One of the most important elements of recovery is individualization. To maximize efficiency, the recovery process must be programmed and applied in accordance with the specifics sports.

The growing match play and training demands of a professional tennis player are putting a greater emphasis on the role of performance recovery and reducing the risk of injury. This process should start immediately after a competitive game or high intensity training session before the opportunity to fully optimise the recuperation process diminishes.

The role of recovery is to help the players adapt faster in training process and to prevent the illnesses and injuries.

Athletes should play an active role in monitoring recovery, such as:

• a training program

•a good sleep

• a program of stretching exercises

• a program of relaxation techniques.

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